

H. J. McCANN

Simplex Concrete Piling



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H. J. McCANN. \$15.00

Home Office
The SIMPLEX CONCRETE PILING CO.
Tacony, Philadelphia, Pa.

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The SIMPLEX SYSTEM *of* CONCRETE PILING

SIMPLEX CONSTRUCTION CO.

NEW YORK : : : : N. Y.

HOW A SIMPLEX PILE COMPRESSES *the* SURROUNDING SOIL

A CLEAR illustration showing that the greatest compaction takes place immediately about the pile, and that disturbance ceases about one diameter away from the pile.



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CCA

S I M P L E X

The MOST PRACTICAL SYSTEM OF PLACING CONCRETE PILING IN THE GROUND IN STRAIGHT, CYLINDRICAL SHAPE TO SUCH DEPTHS *and* OF SUCH DIAMETERS AS ARE REQUIRED BY THE CONDITIONS OF SOIL AND LOADING.

A d v a n t a g e s

Simplicity.

Certainty of results.

Ease of operation.

Constant sectional area.

Easily reinforced.

Greatest frictional surface.

Equal bulk of concrete for each foot of length.

Load transferred to firm bearing strata without reference to or dependence on the poor soil above, although taking full advantage of it in addition to the end bearing value.

E f f e c t s

Durability equal to that of natural rock.

Surpassing carrying power.

Increased value of soil due to great compression.

A conspicuous economy in first cost over all other methods and renewals never required.

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CCA

FOREWORD

THE application and general adoption of Concrete Piling as the logical method of carrying structures on soils of poor bearing value has, during the last few years, become as widespread as the use of concrete in superconstruction.

The economy in time and money involved by their use, and the wide success of the first practical systems, has induced the bringing out of a number of new types in imitation and attempted competition. These latter are generally so impractical, so expensive or so lacking in merit that they are usually very short lived.

No one type of pile has as yet been designed that will fully and economically meet the great variety of conditions of soils and loadings presented, hence the nature of the ground must be carefully considered and a pile selected that will insure absolutely certain results by its use.

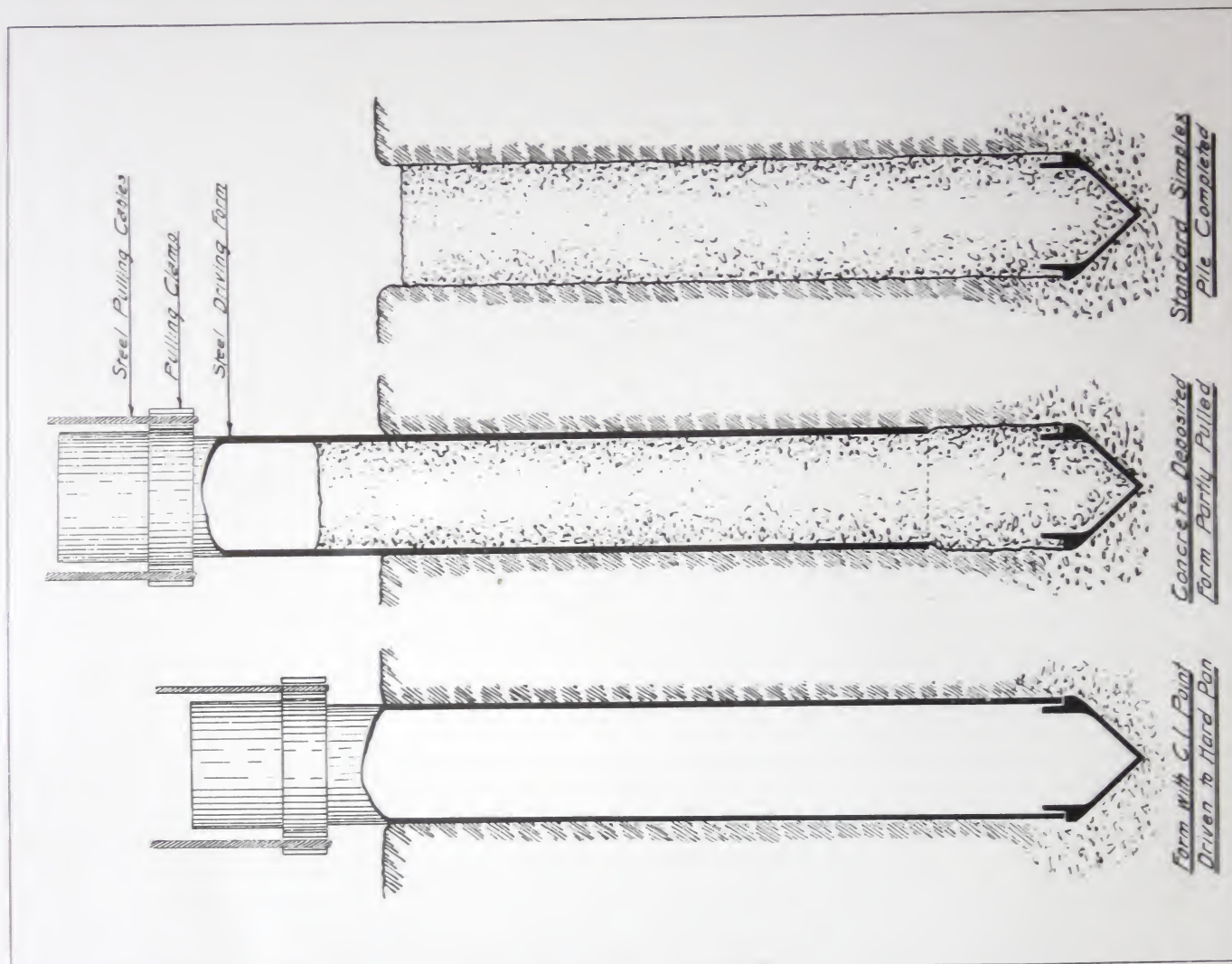
Further, as the nature of the soil is not always fully known, the use of a system that is capable of producing only one type of pile very often leads to unsatisfactory results, due to the fact that it does not fit the conditions.

With these facts constantly in view during our long experience, we have developed several methods of installing Concrete Piling, enabling us, by the use of the method best suited to the circumstances, to meet and successfully cope with every condition of soil and loading.

The Simplex System permits without material change of apparatus, the placing of several different types of piles. Each type is of proven integrity, and installed in a manner that insures perfect results.

It is manifestly impossible for us to publish definite prices for Simplex Piling. Labor and material costs vary in different localities. The scope of the operation, the location of the work, and the conditions surrounding it, all enter into and govern the costs.

We invite correspondence, and would be pleased to place our experience at your disposal. We are prepared to send able and responsible representatives to call on you and to visit the site of prospective work at any time.



THE STANDARD SIMPLEX PILE

THE STANDARD SIMPLEX PILE

THE Standard Simplex Pile, illustrated on opposite page, fills the great majority of requirements and is adaptable in fills, city dumps and in all ordinarily unreliable ground. Briefly described, the method is as follows:—

A conical cast iron point is fitted loosely to the lower end of a 16 in. diameter, $\frac{3}{4}$ in. thick, hollow, cylindrical steel tube or form, and driven to suitable bearing, under a 3000 Pound Drop Hammer, operated in a suitably rigged Pile Driver Frame. Practically the entire energy of the hammer is delivered to the point, giving full value to the penetration, equal compression to the soil all the way down, and developing the full bearing value of the soil from top to point.

When the required depth is reached, the form is filled, by means of Drop Bottom Buckets, with soft concrete, to a sufficient height and quantity to fill the pile hole to the proper level. The form is then pulled out, leaving the point in the ground, the concrete being forced down and out by its own weight, completely filling the hole to its compacted wall.

THE CONCRETE IS ALWAYS PLACED BEFORE THE REMOVAL OF THE FORM, and there is no shell left in the ground, the concrete being molded against the rough compacted walls of the pile hole, admitting of tremendous skin friction in addition to its end bearing.

The form with its point effectually excludes water and holds the soil until the concrete is deposited, after which the form is withdrawn, allowing the concrete to harden in intimate contact with the soil. Resistance to driving is due to end bearing only, while the rough surface of the finished pile develops all the frictional value of the soil in addition.

REINFORCEMENT

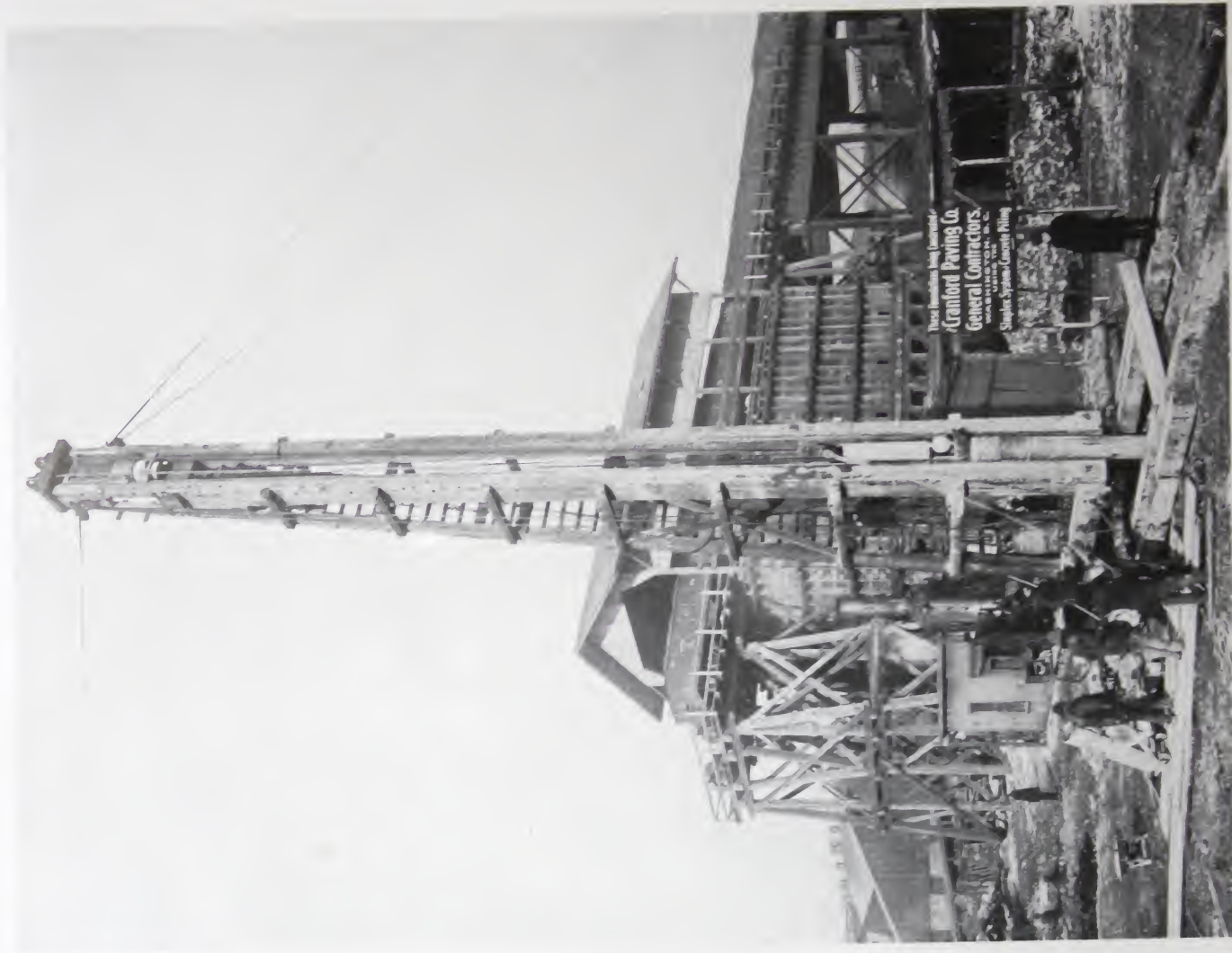
As generally used, no reinforcement is required, but the System admits of placing any desired reinforcing members within the form before filling with concrete, or where straight bars are used, forcing them down into the concrete before it has set.



SETTING FORM ON CAST IRON POINT—STANDARD SYSTEM



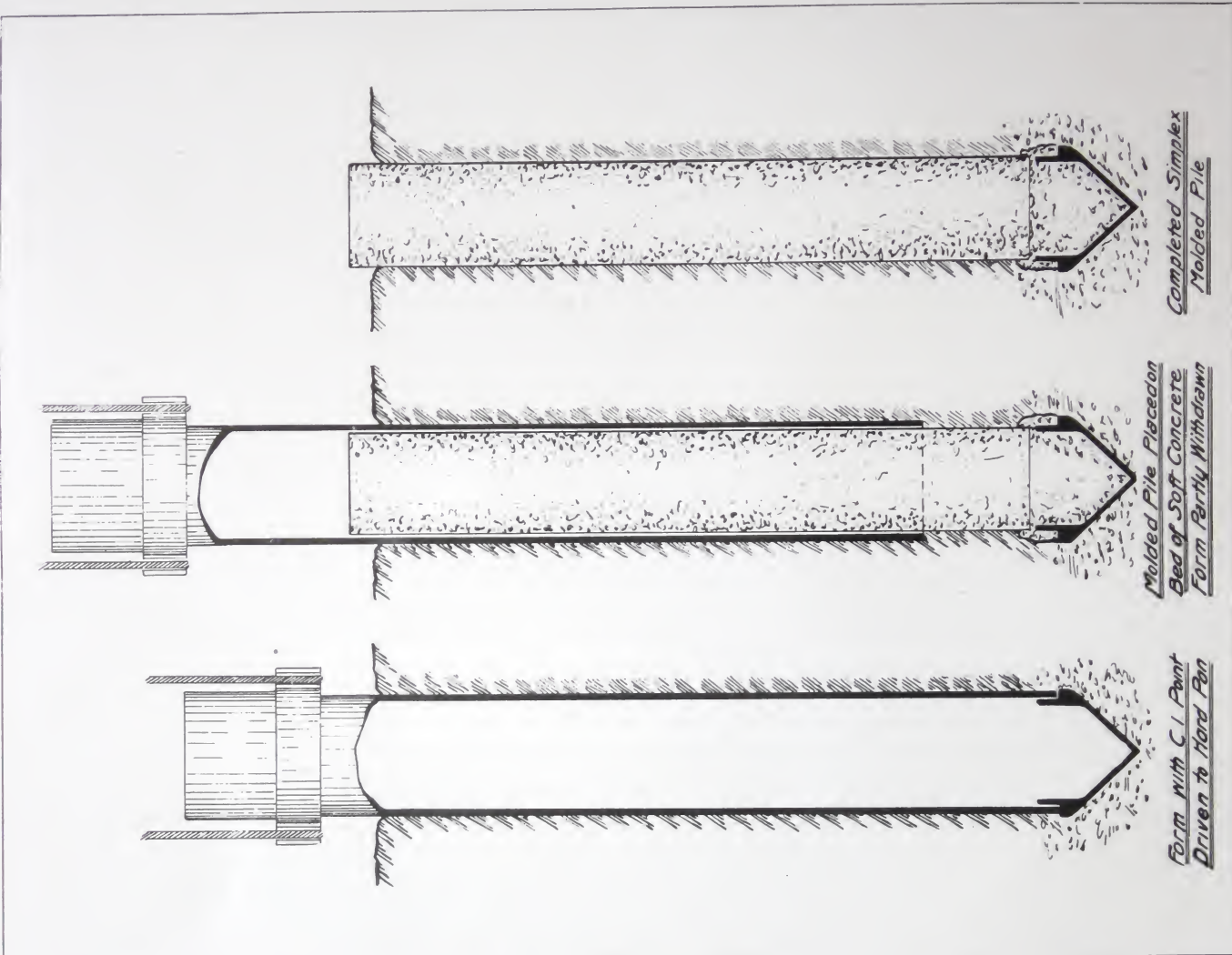
TYPICAL PIER OF STANDARD SIMPLEX PILES



SIMPLEX DRIVER AT WORK — STANDARD SYSTEM



STANDARD PILE FOUNDATION READY FOR CAPPING



THE SIMPLEX MOLDED PILE

THE SIMPLEX MOLDED PILE

FOUNDATIONS for docks, wharves, sea walls and other water work, or for foundations where the ground is composed largely of wet peat, or where very soft boggy conditions prevail, demand particular treatment.

The ordinary molded pile may easily meet the conditions, but driving it to place by ordinary processes must result in probable injury to the pile. Cushioning the blow of the hammer absorbs some of the shock to the pile, at the expense of its penetration, and places the carrying capacity among the unknown quantities.

Jetting is not permissible in many places, impossible in some others, and in the balance so disturbs all of the ground in the vicinity as to make this method undesirable.

The Simplex Molded Pile Method shown on opposite page fully overcomes these objections in a thoroughly practical manner. It involves the driving of the form with the Cast Iron Point to the required penetration as in the Standard System. A small quantity of soft concrete is introduced through the form, and on this as a bed, a molded reinforced pile is lowered through the form, which is then withdrawn, leaving the molded pile in position.

A quantity of thin grout poured into the form as it is withdrawn materially increases the skin friction in soils where it is of any value.

By the Simplex Method, molded piles are installed in a manner admitting of positive results as to penetration, without striking a blow on the concrete and entirely avoiding the questionable consequence of jetting.

The Standard size gives an average of 13 in. diameter cast section throughout, on a 17 in. diameter point, and a length of 40 ft., this has met all requirements to date, but we are prepared to install them in larger diameters and even to greater length.

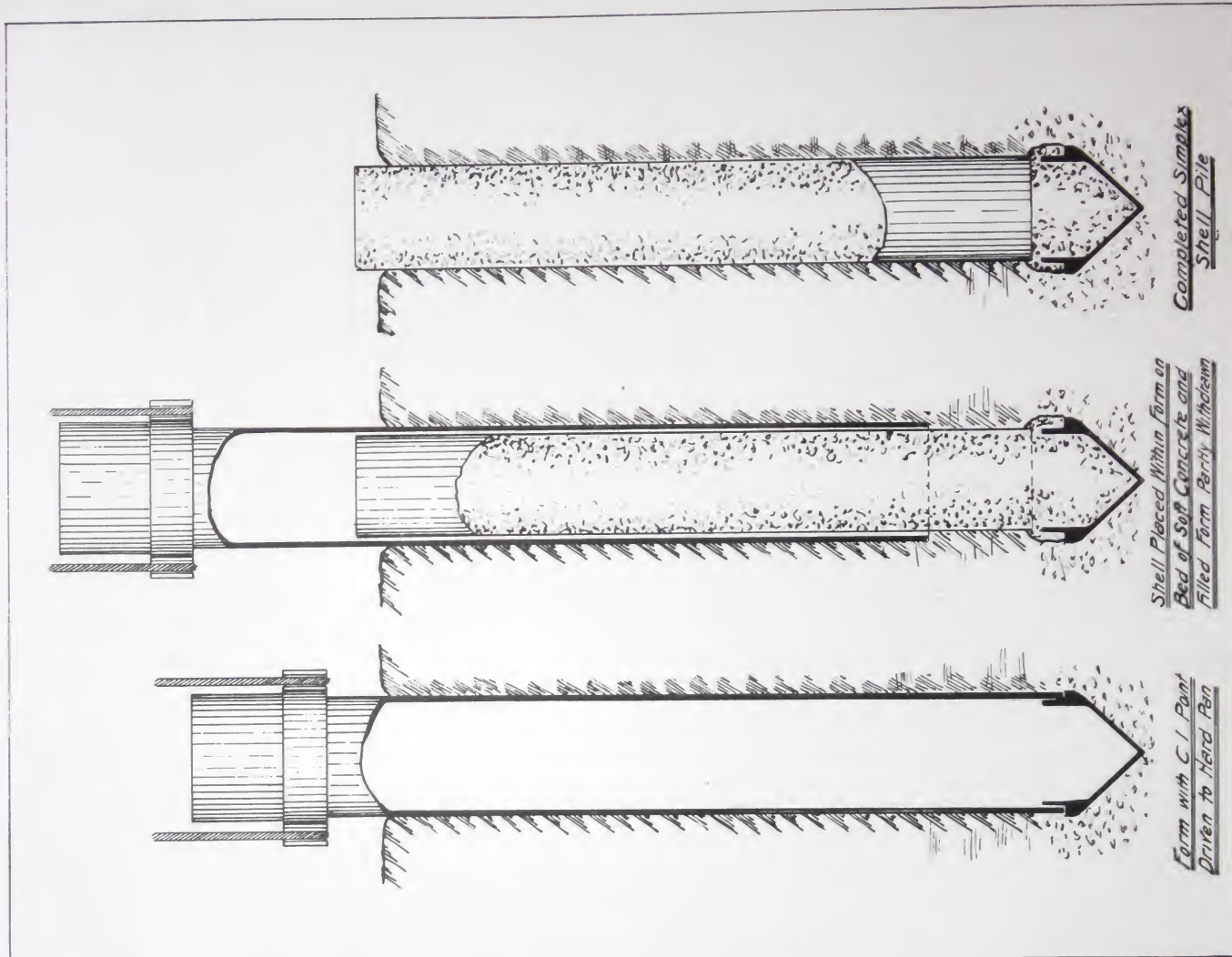
Simplex Molded Piles are cast either vertically or horizontally in heavy wooden or metal forms, insuring straightness and uniformity of diameter. Any desired reinforcement that conditions require may be used.



MOLDING AND PLACING SIMPLEX MOLDED PILES



SIMPLEX MOLDED PILES



THE SIMPLEX SHELL PILE

THE SIMPLEX SHELL PILE

THE occasional encounter with soils of very soft silt, containing underground streams or impregnated with matter injurious to the proper setting of cement, may not always demand the use of Molded Piles.

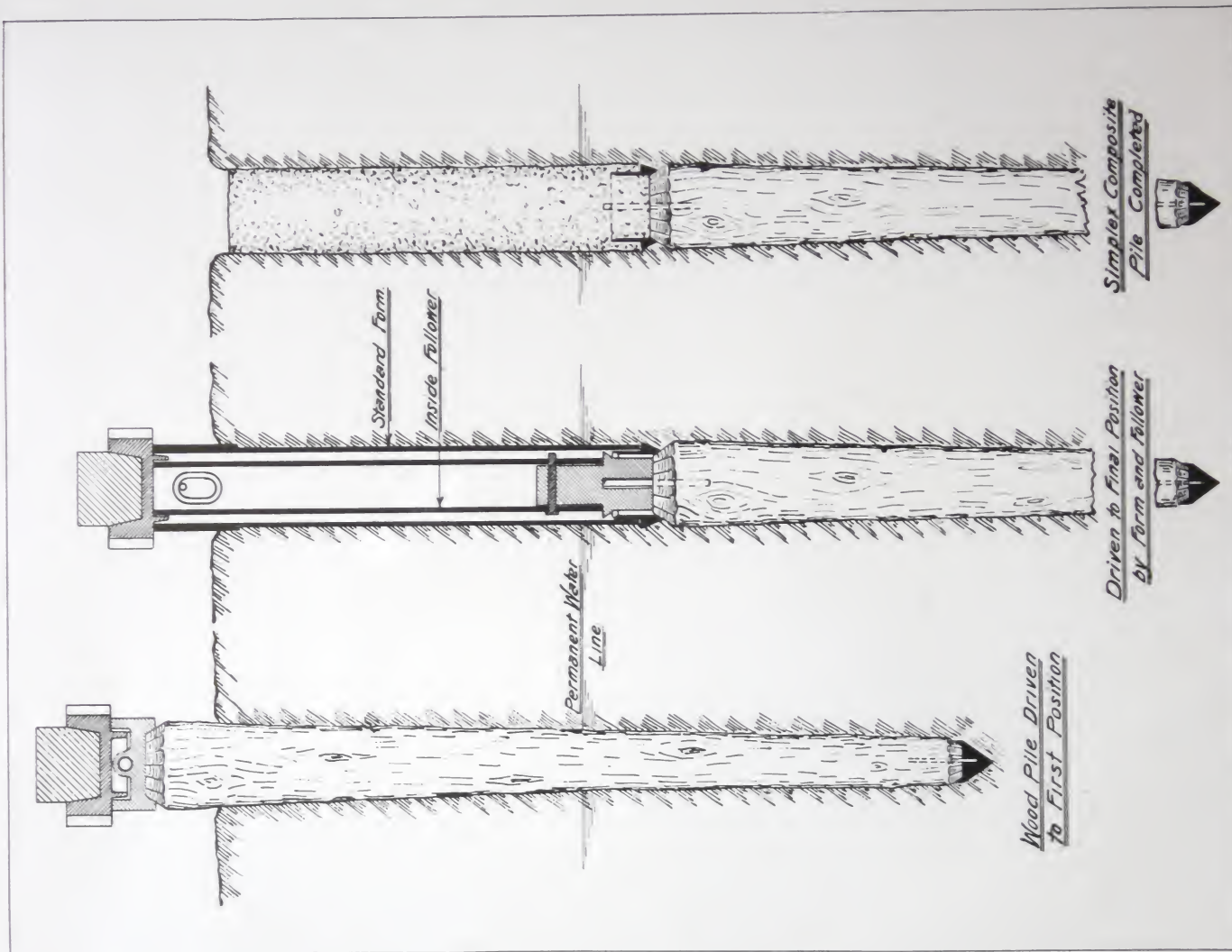
Although the latter are perfectly adapted to the requirements, the expense of surface molding and the necessary time required for curing are not always allowable.

The Simplex Shell Pile, shown on opposite page, differs from the Standard System in the fact that after the form with point is driven to the required penetration, a cylindrical, sheet steel tube or shell of slightly less diameter than inside of form and of required length is inserted into the form, and concrete in soft state introduced into the tube.

The form is then withdrawn, leaving the steel incased concrete in the ground, bearing on the enlarged point.

There can be no possible admixture of extraneous matter with the concrete, and as the heavy outer form remains in place, protecting the inner shell until the concrete is deposited, there is manifestly no distortion of the shell, nor is there any opportunity for the shell to lift away from the position of original penetration.

The Shell Pile, like all other Simplex Types, may be readily reinforced to suit any particular requirements.



THE SIMPLEX COMPOSITE PILE

THE SIMPLEX COMPOSITE PILE

THIS type was designed to cheaply meet soil conditions requiring great depth of penetration and where the permanent water line is considerably below the surface. See illustration on opposite page.

A wood pile of the required length and diameter is first driven in the usual manner. When down to convenient level, the top is prepared for the reception of a heavy cast ring and bored for dowel pin.

A follower is placed on top of the pile and a standard form is placed on the ring, the whole is then driven to the necessary depth, the follower is removed, the form filled with concrete in proper amount, and the form pulled as in the Standard System, leaving the wood pile at proper penetration, with the top well below water line and surmounted by a concrete column to required grade.

The cast ring prevents deforming the top of the wood pile, and together with the dowel makes an absolute joint and perfect alignment of wood and concrete.

The Simplex Composite Pile lends itself to the modifications of the Standard System, and readily admits the use of a molded or a shell pile, on top of the wood pile where the Standard Pile is not best adapted.



DRIVING SIMPLEX COMPOSITE PILING



COMPLETED SIMPLEX COMPOSITE PILING



The Alligator Point Closed in
Position for Driving

THE ALLIGATOR POINT

A LOOSE gravel soil or one of a shaley nature is admirably met by the use of the Alligator Point. As clearly indicated, this point is designed to open and withdraw with the form, leaving nothing but the concrete in the ground, and saving the cost of the cast iron point.

Except that no cast iron point is left in the ground, piling installed by the use of the Alligator form does not differ in method or effect from the Standard System using the loose Cast Iron Point.

Simplex Molded Piles are placed equally well with Alligator or loose Cast Iron Points.



The Alligator Point Open
While Pulling

WE exhibit on the following pages a few typical structures carried by Simplex Piling, together with a selection of tests by loading, exposure and experience.



COLLEGE OF PHYSICIANS, Philadelphia, Pa.

COPE & STEWARDSON, Arch'ts



WORSTED MILLS, PACIFIC MILLS, Lawrence, Mass.

L. E. LOCKE, Gen'l Contractor



MASONIC TEMPLE, Washington, D. C.

WOOD, DONN & DEMMING, Arch'ts



STATE TOBACCO WAREHOUSE, Baltimore, Md.

BALDWIN & PENNINGTON, Arch'ts

JOHN WATERS

Builder

23 East Centre Street

Baltimore

BALTIMORE, June 11, 1909.

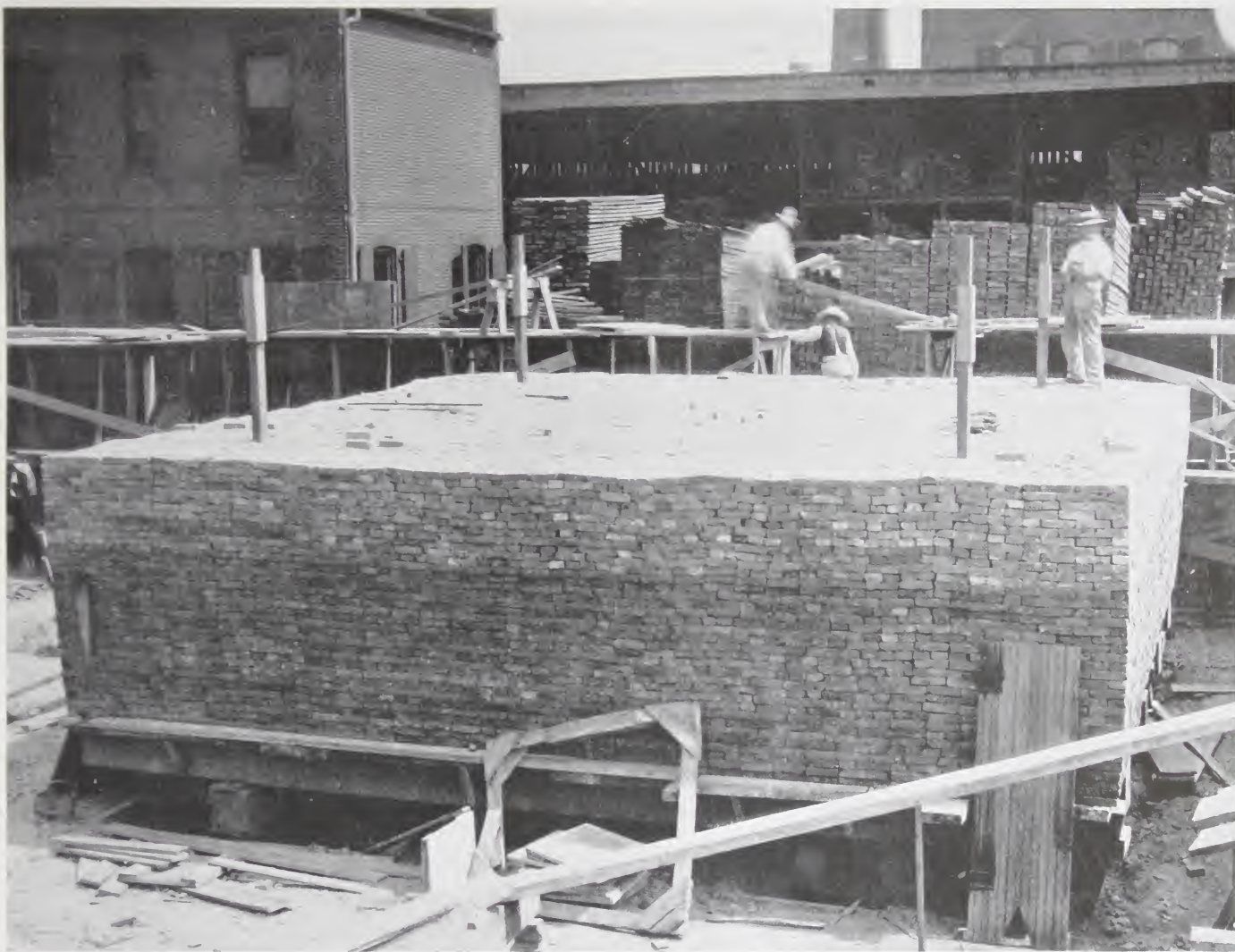
I contracted with the Cranford Paving Company of Washington, D. C., to construct Simplex Concrete Piles on this work, using an inner shell which left a permanent shell for every pile ; however, only four piles of this character were used as a test, and it was demonstrated by the Cranford Paving Company, to both myself and the architect, that the straight Simplex pile made a better pile for this particular piece of work than the protected shell pile ; therefore the work is being executed, and the piles placed by the Standard Simplex Method, omitting the use of an outside casing or shell, and the entire work is being executed in this manner.

Trusting this information is satisfactory, I beg to remain,

Very truly yours,

JOHN WATERS.

State Tobacco Warehouse
Baltimore, Md.



TEST LOAD—240 TONS ON 4 16 IN. STANDARD SIMPLEX PILES
State Tobacco Warehouse, Baltimore, Md.



CIGAR FACTORY
Theobald & Oppenheimer, Philadelphia, Pa.

CHAS. BALDERSTON, Arch't



MONROE STREET BRIDGE, Washington, D C

W. J. DOUGLAS, Eng'r of Bridges

WALTER F. BALLINGER
Assoc. Am. Inst. of Architects
M. Am. Soc. C. E.
EMILE G. PERROT
Assoc. Am. Inst. of Architects
Assoc. M. Am. Soc. C. E.

BUSINESS BUILDINGS
INDUSTRIAL PLANTS
INSTITUTIONAL BUILDINGS
REINFORCED CONCRETE SPECIALISTS

BALLINGER & PERROT

Architects and Engineers

Boyertown Building, 1211 Arch St.

PHILADELPHIA, July 6, 1911.

THE SIMPLEX FOUNDATION COMPANY,
3400 Disston Street, Tacony,
Philadelphia, Pa.

Dear Sirs: In compliance with your recent request we are sending you herewith six solio prints of the Victor Talking Machine Company's tank and trestle which is supported upon Simplex concrete piles.

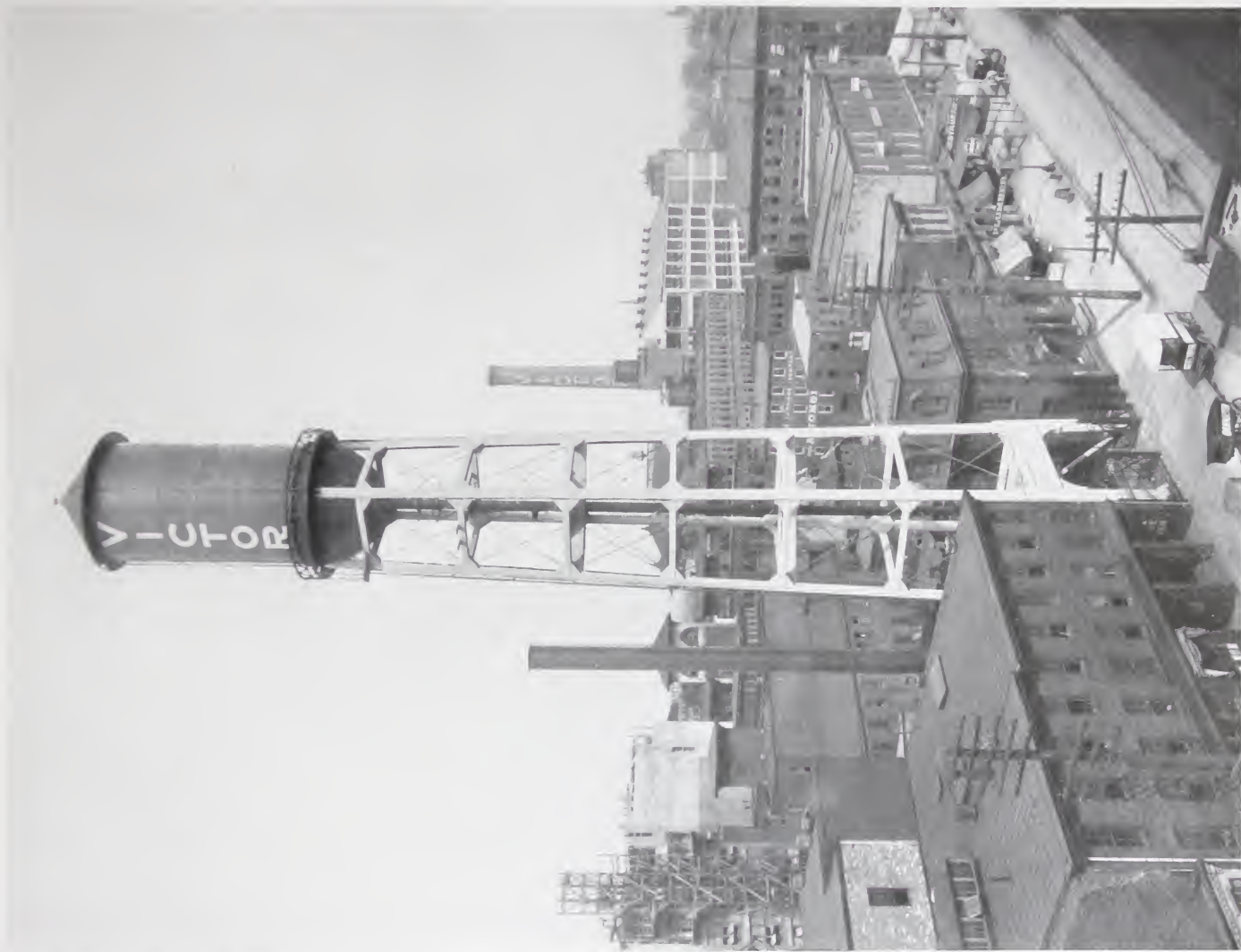
We have taken levels on two occasions to see if there were any settlement of this trestle, and have been unable to note any.

Would say that we have used Simplex concrete piles for the large six-story Cabinet Factory of the Victor Talking Machine Company, as well as for other buildings, and have always had complete satisfaction with them.

As these piles are equally durable either in wet or dry ground, we believe they are more economical in the long run, notwithstanding their slight additional cost over wood piles.

Yours truly,

BALLINGER & PERROT.



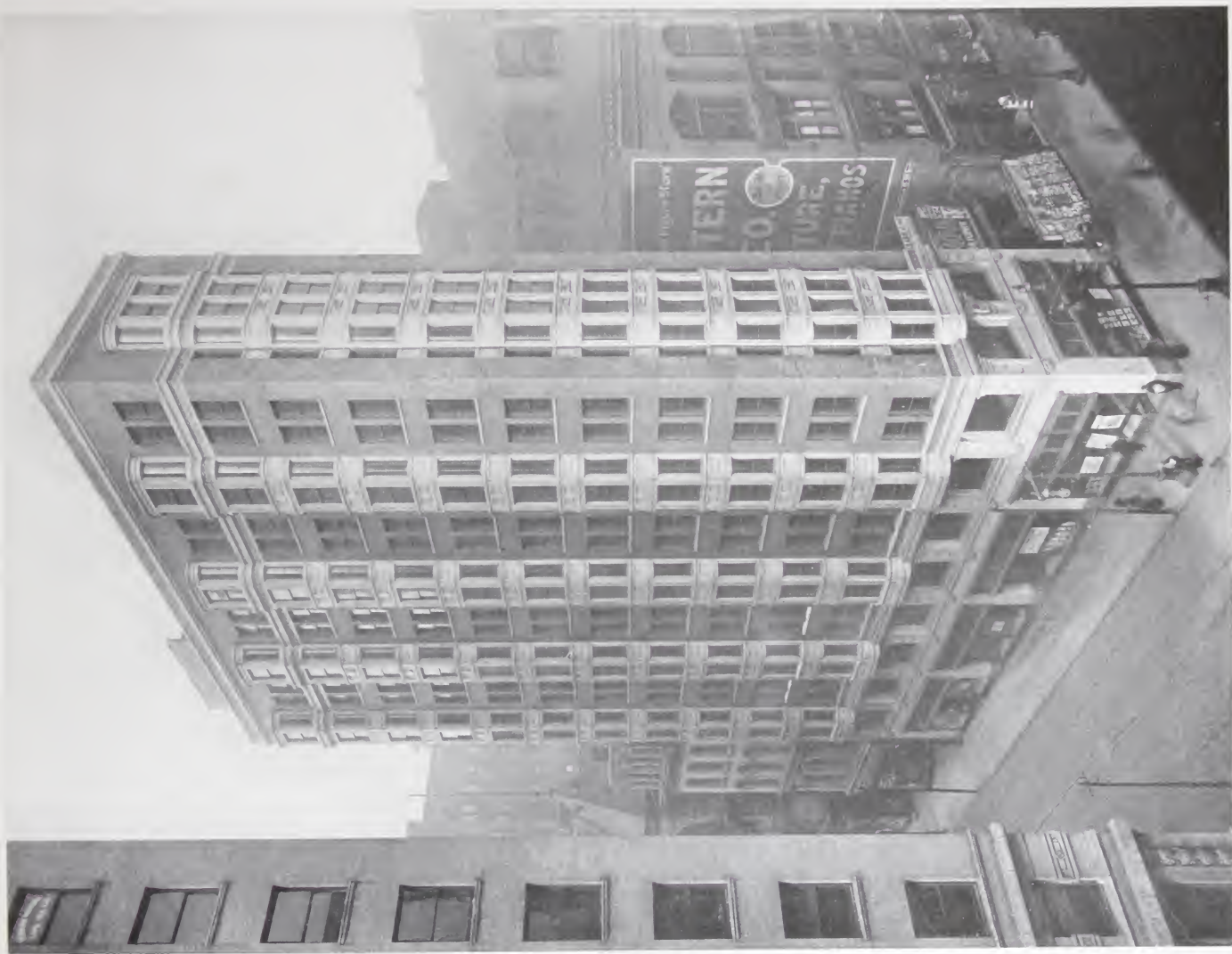
100,000 GALLON TANK — 135 ft high
Victor Talking Machine Co., Camden, N. J.

BALLINGER & PERROT, Eng'rs



CABINET FACTORY
Victor Talking Machine Co., Camden, N. J.

BALLINGER & PERROT, Eng'rs



LA SALLE BUILDING, St. Louis, Mo.

ISAAC S. TAYLOR, Architect

BIRD'S-EYE VIEW OF SEVEN PILE DRIVERS AT WORK ON THE FOUNDATIONS FOR THE WAREHOUSES OF THE PITTSBURG TERMINAL WAREHOUSE & FREIGHT TRANSFER COMPANY, PITTSBURG, PA.



The buildings shown in completed state on opposite page are carried on five thousand Standard Simplex Piles, totaling $31\frac{1}{2}$ miles of length, and representing the largest single operation of its kind in the world. The actual driving time was seventy-six days, as against the lowest time bid by other methods of eighteen months.

The value of the time saved by the use of the Simplex System was equivalent to the cost of the entire foundation.



WAREHOUSES, Pittsburg, Pa
Pittsburg Terminal Warehouse & Transfer Co.

CHAS BICKEL, Arch't





300 TON TEST ON 5 STANDARD SIMPLEX CONCRETE PILES Duration of test, 5 days No settlement
Westinghouse Machine Co., Pittsburg, Pa.



EXPOSURE TEST, STANDARD SIMPLEX CONCRETE PILES. Piles exposed for their entire length (25 feet) and found faultless. Heat, Light & Power Plant, U. S. Capitol Buildings, Washington, D. C.



HEAT, LIGHT & POWER PLANT
U. S. Capitol Buildings, Washington, D. C.

WESTINGHOUSE CHURCH KERR CO., Eng'rs



PILE TAKEN OUT INTACT AFTER EXPOSURE TEST (see preceding page)
Heat, Light & Power Plant, U. S. Capitol Bldgs., Washington, D. C.



WAREHOUSE, Louisville, Ky.
Rugby Distillery Co.

J J GAFFNEY, Arch't

BERT L. BALDWIN

GARRETT W. SIMPSON

BERT L. BALDWIN CO.

Engineers

Rooms 72, 73, 74, 75

Perin Bldg.

T. A. BENTLEY & SONS CO.,

Toledo, Ohio.

CINCINNATI, O., Oct. 16, 1908.

At the request of the Cranford Paving Company, I am writing this letter to say that the work they performed for me in placing over 840 of their "Simplex Piles" in filled ground to form foundation supports and carry a five-storied reinforced concrete foundry building was most satisfactory. This building is a part of the Lunkenheimer Co.'s Plant to be used for the storage of metals, and as a brass foundry, where the column loads are necessarily excessive. The piles were driven to a depth varying from 16 feet to 40 feet, and in one instance to over 50 feet.

The work of placing the piles progressed rapidly and was most satisfactorily performed, as we have been unable to detect any signs of settlement.

I consider this pile far in advance of any that I know of, and by its use great economy can be secured in the cost of deep foundations, especially in uncertain soil; this is especially true in semi-dry fills, where the life of wood piling is very limited.

If there is any further information that I can furnish, I would be pleased to respond.

Yours very truly,

(Signed) BERT L. BALDWIN.

Reference:

LUNKENHEIMER BRASS FOUNDRY
BUILDINGS



BRASS FOUNDRY, Cincinnati, O.
The Lunkenheimer Co.

BERT L. BALDWIN, Eng'r



MILL No 1
Farr Alpaca Co., Holyoke, Mass

SAMUEL M. GREEN, Inc., Eng'rs



APARTMENT HOUSE
Coleman & Gilbert, Boston, Mass.

F. A. NORCROSS, Arch't



CARRIE FURNACES Nos 6 and 7
Carnegie Steel Co , Rankin, Pa

FLEMING & SCHAFER, Eng'rs



PILE DRIVER AT WORK ON PLAZA IMPROVEMENTS
Union Station, Washington, D. C.

D. H. BURNHAM CO., Arch^{ts}





HOTEL CONTINENTAL, Washington, D. C.
Washington Hotel Company

A. P. CLARK, JR., Arch't



WAREHOUSE, Louisville, Ky.
Belknap Hardware & Mfg. Co.

D. X. MURPHY & BRO., Arch'ts



DRESDEN APARTMENTS, Washington, D. C.

H. WARDMAN, Builder





PAYSON STREET SCHOOL, Baltimore, Md.

E. D. PRESTON, Inspector of Bldgs.



VIEW OF 6000 TON COAL POCKET
Pacific Mills, Lawrence, Mass

CHAS. T. MAIN, Eng'r



OFFICE BUILDING, Philadelphia, Pa.
North American Lace Co.

WM STEELE & SONS CO, Eng'rs



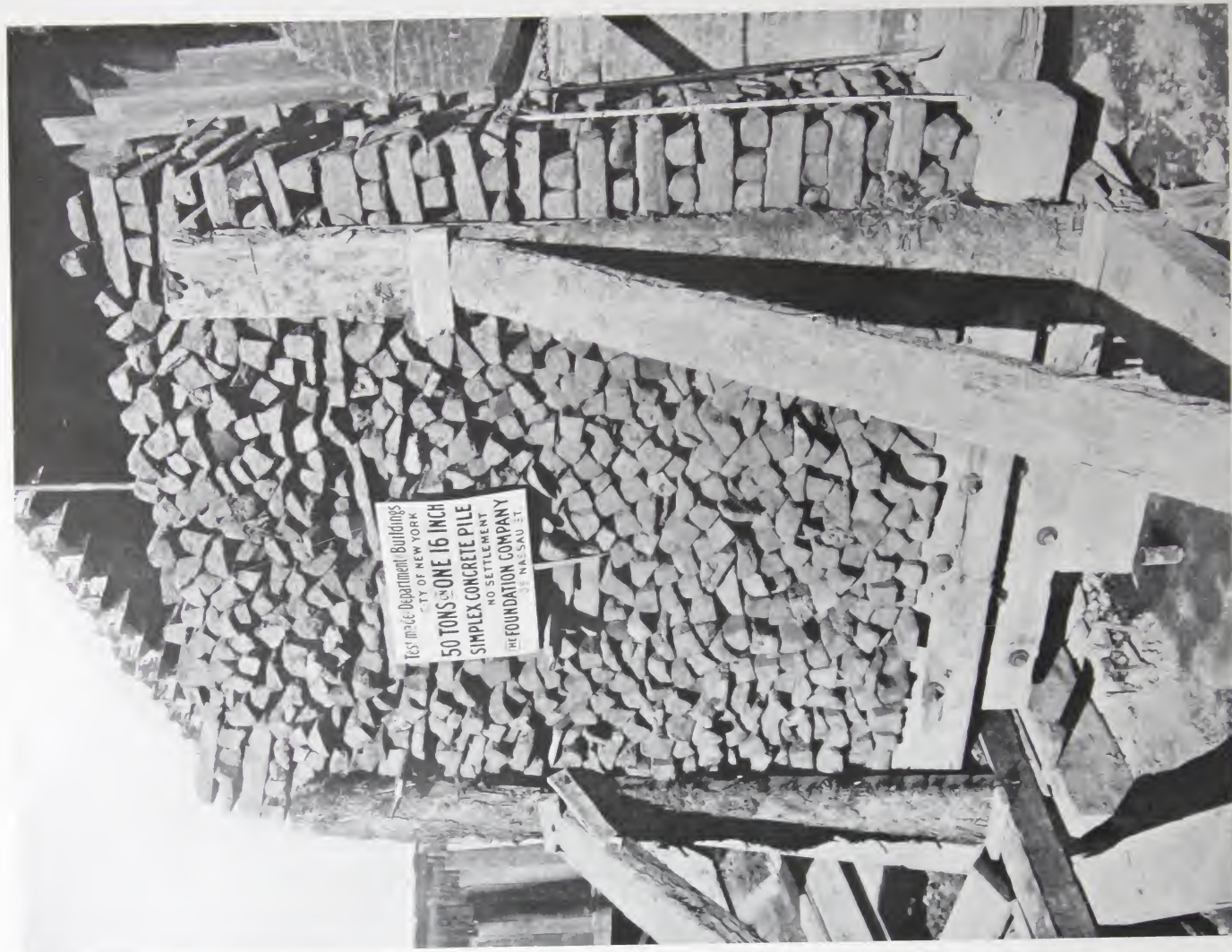
10,000 TON COAL POCKET, Charlestown, Boston, Mass.
Lehigh & Wilkes-Barre Coal Co.

GEO. P. CARVER, Eng'r



MIKVEH-ISRAEL SYNAGOGUE, Philadelphia, Pa.

PILCHER & TACHAU, Arch'ts





FIRST CHURCH OF CHRIST, SCIENTIST, Philadelphia, Pa.

CARRERE & HASTINGS, Arch'ts

LOCKWOOD, GREENE & CO.

Architects & Engineers

93 Federal St., Boston

PACIFIC MILLS PRINT WORKS DEPT.,
SO. LAWRENCE, MASS., Feb. 21, 1911.

ALBERT C. TITCOMB, President,
New England Foundation Co.,
Boston, Mass.

Dear Sir: Referring to recent test of Standard Simplex Pile made at Pacific Mills Print Works Department, So. Lawrence, Mass., would say that the top of pile was trimmed off and capped. An iron bearing plate was bedded in the cap and a grill of timbers was placed for brick test load.

The weight per brick was established at 5.18 lbs., determined by weighing three separate piles of 100 bricks each. The material in load platform was weighed before load was applied; the total weight of this material being 3456 lbs. The bricks were counted as loaded.

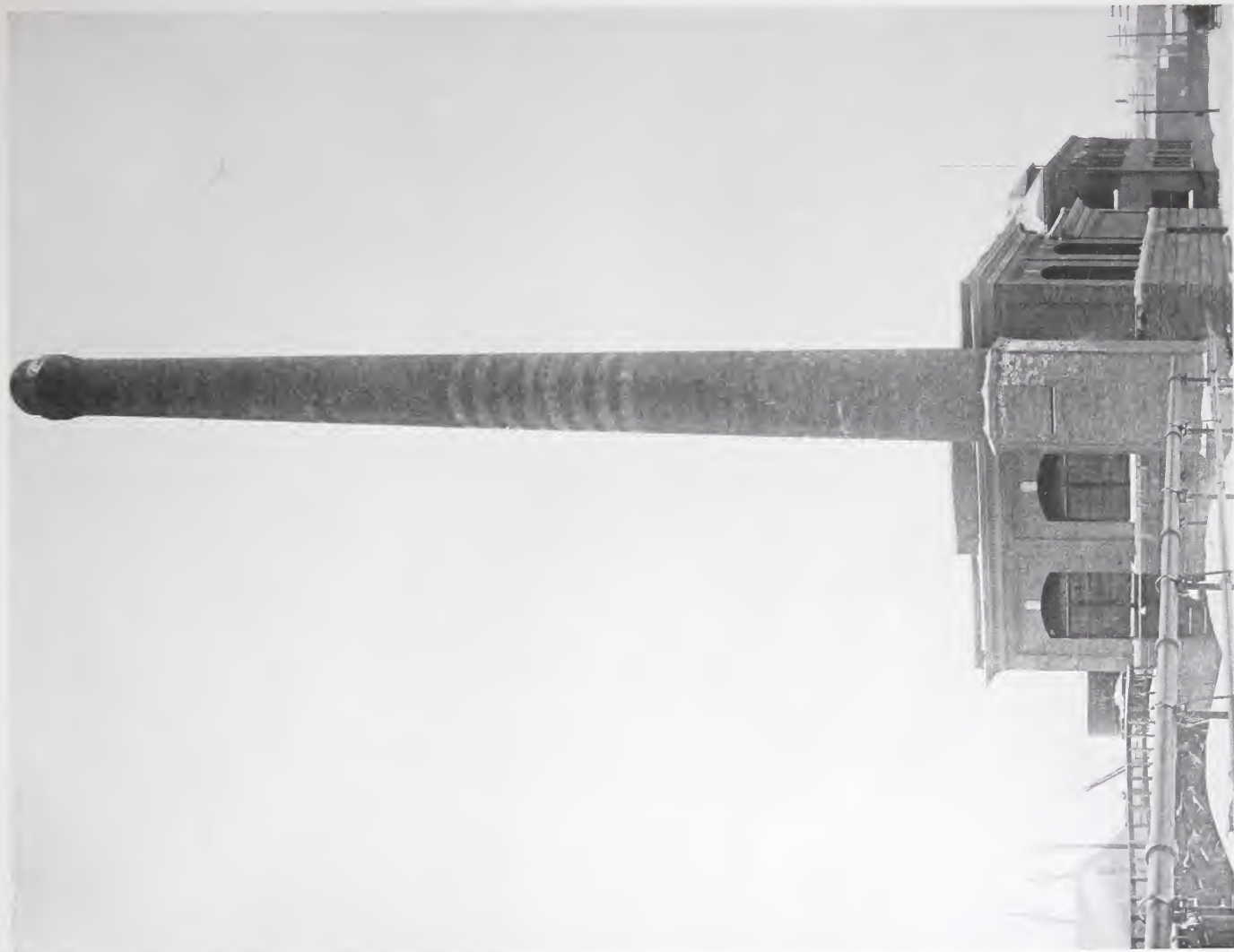
A positive bench mark on river wall was established, and readings made to top of a section of 1¼ inch gas pipe built vertically in the center of the load, and reaching down to the bearing plate on the top of the pile.

Loading commenced May 13th and full load of 30 tons placed May 14th, standing until May 19th. Variation of readings, — .006. On May 19th an additional 15 tons were added, and on June 8th the load was increased to 60 tons.

Readings were made daily by one engineer and checked by another, and total variation from May 14th to July 14th, when test closed, was .012 feet.

Diam of pile	16 ins.	Length of pile	19 ft. 7 ins.
Hammer weight	3300 lbs.	Drop	8 ft.
Penet. last 8 blows	1¾ ins.	No. blows total	300
Mixture	1 : 2½ : 5	Pile driven May 3, 1910	

D. J. ANDREW, Supt.



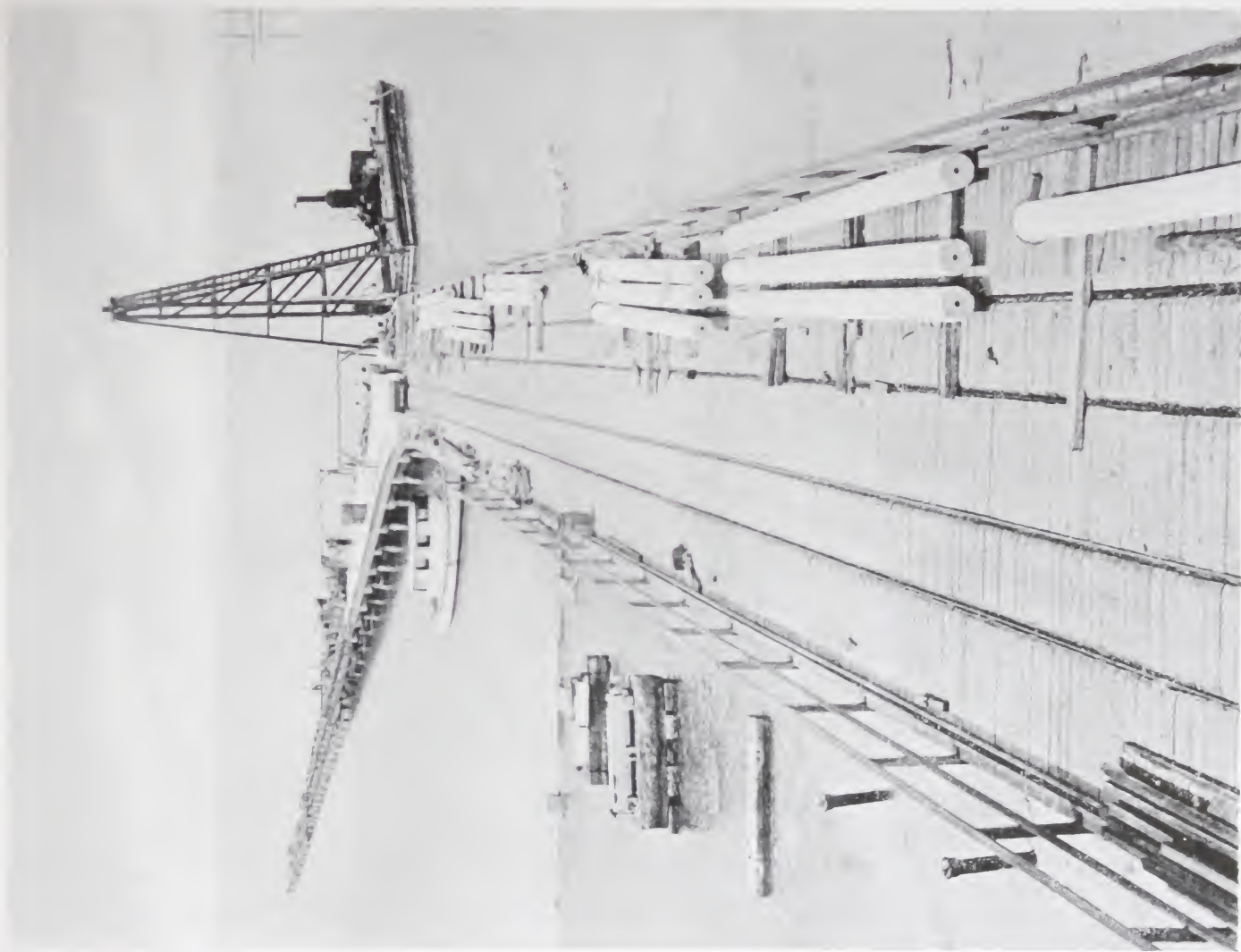
POWER & HEATING PLANT, East Boston, Mass.
B. & A. R.R. Co., N. Y. C. R.R., Lessee

B. & A. R.R., Eng'r Dept.



DOCK CONSTRUCTION, Key West Fla.

J. M. BRAXTON, Asst. Eng'r
U. S. Eng'r Corps



DOCK AT KEY WEST, Florida

Length 1100 feet Head 160 feet x 50 feet

J M BRAXTON, Asst Eng'r
U S. Eng'r Corps



POWER PLANT
Pacific Mills, Lawrence, Mass

CHAS. T. MAIN, Eng'r



APARTMENT HOUSE, Boston, Mass.
Ansonia Trust

NEWHALL & BLEVINS, Arch'ts



RECONSTRUCTION OF OLD FOUNDATIONS
Chatfield & Woods Co., Cincinnati, O

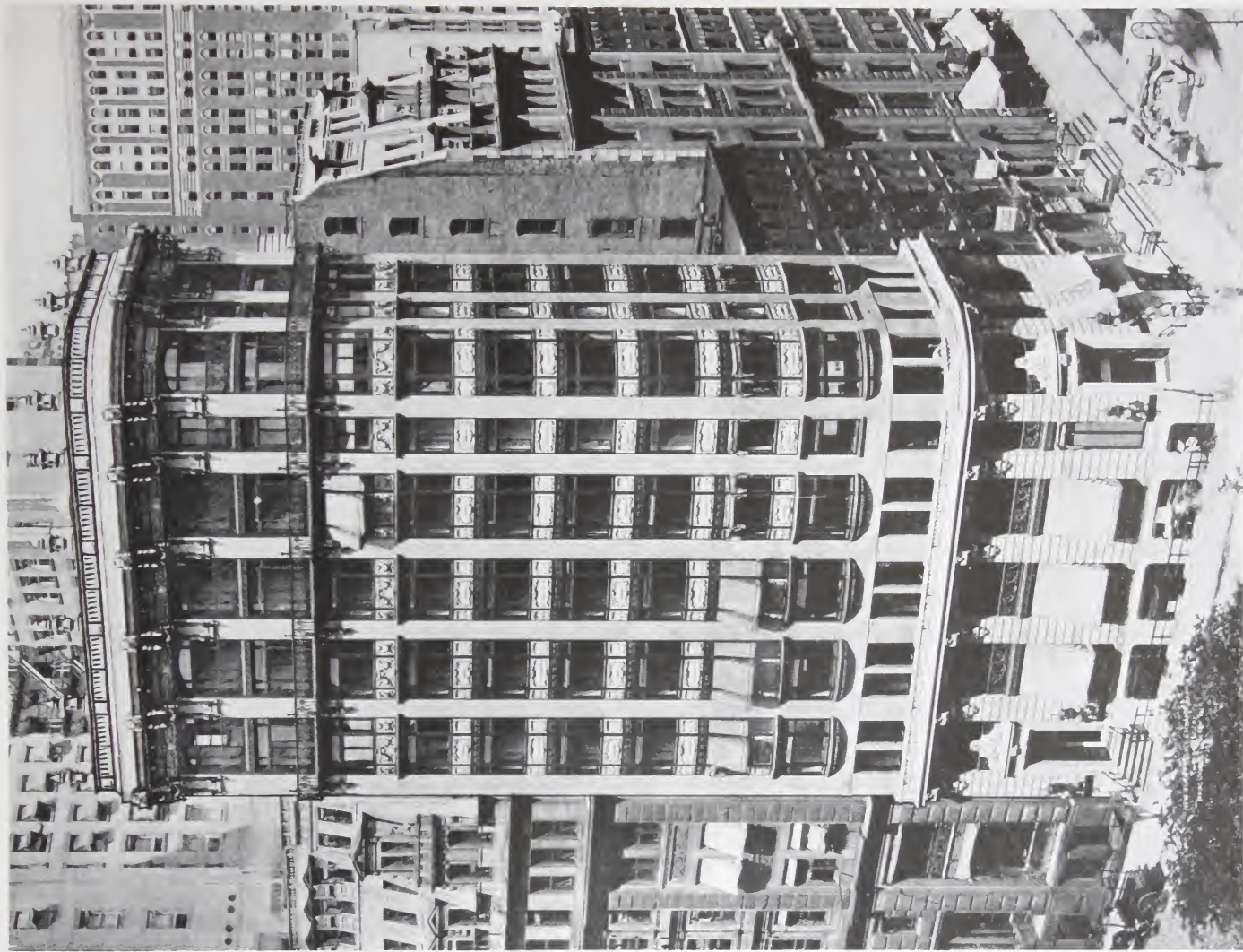


RECONSTRUCTION OF OLD FOUNDATIONS
Chatfield & Woods Co., Cincinnati, O



SHOE FACTORY & BOILER HOUSE
Thomas G. Plant Co., Boston, Mass.

M. D. SAFFORD, Arch't



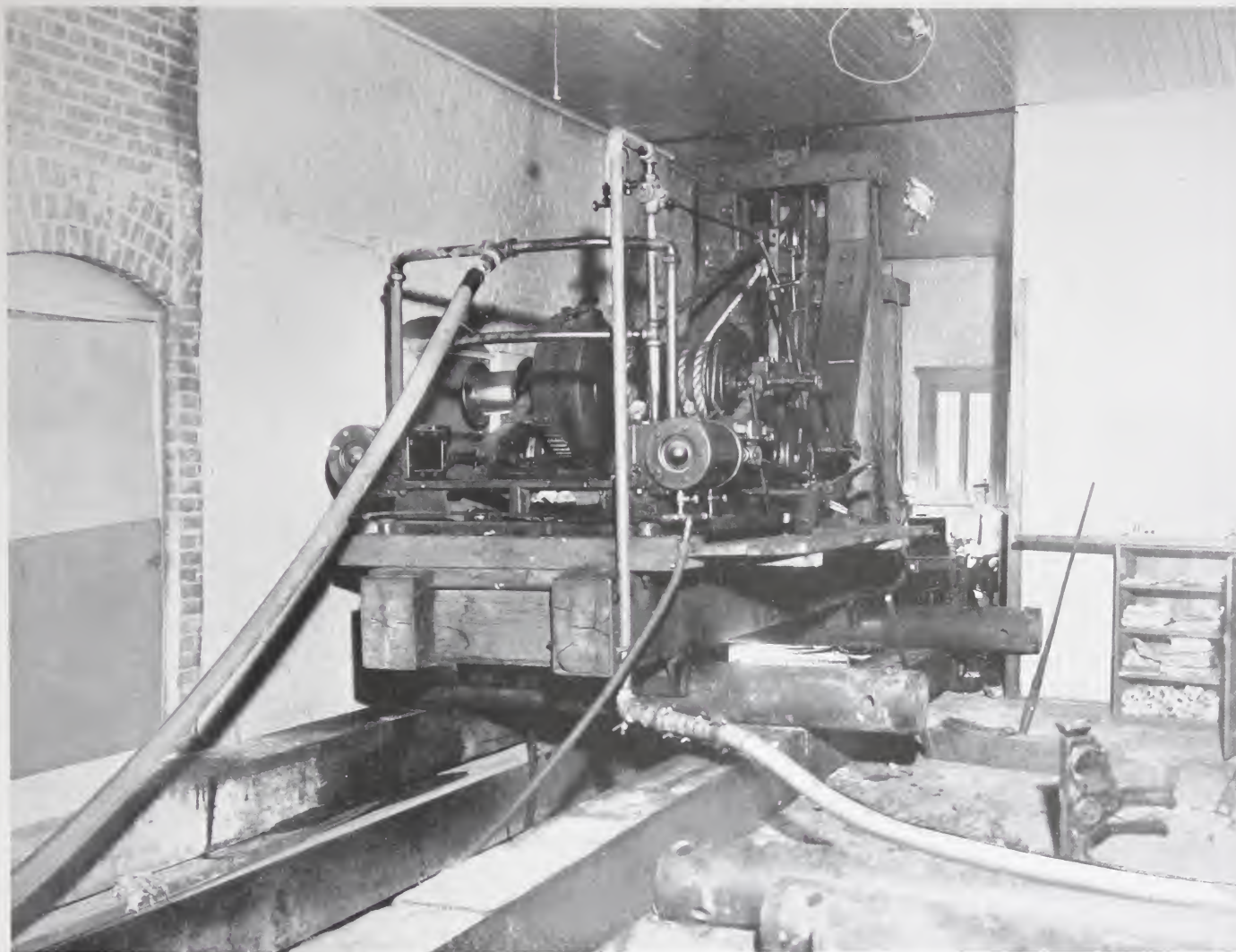
PRODUCE EXCHANGE BANK, New York, N. Y.

ERNEST FLAGG, Arch't



GOVERNMENT ACCEPTANCE TEST
Marietta, O., P. O. Building

JAS KNOX TAYLOR, Sup Arch't



SPECIAL DRIVER, INSTALLING STANDARD SIMPLEX CONCRETE PILING IN RECONSTRUCTION OF FOUNDATIONS
OF PAN HANDLE FREIGHT DEPOT & WAREHOUSE CO, Cincinnati, O
By sectional forms, piles 68 feet long were driven in an available headroom of only 14 feet

PITTSBURG PLATE GLASS CO.

Frick Bldg.

THE BEDFORD STONE & CONSTRUCTION CO.,
Traction Terminal Bldg.,
Indianapolis, Ind.

PITTSBURG, PA., Oct. 10, 1908.

Gentlemen:

I am in receipt of your letter of a few days ago asking for opinion in reference to the Simplex System of concrete piling.

I wish to say that we have used this kind of piling very extensively both at our factories in Ford City, Pa., and Crystal City, Mo. The piling has been used both to support buildings and also furnaces.

The foundation walls supporting a brick building about 30 feet high and 120 feet span were placed on piles close to the river. During the high water the earth was washed away from one corner of this building, exposing the piles for about 6 feet. There was absolutely no settlement that could be detected in the building proper, and all we had to do was to fill in the ground that had been washed away.

In another case where furnaces were placed on piles in very marshy, wet ground, the heat of the furnaces dried out the ground, and exposed the piles about 12 to 14 inches; here again, in spite of the receding of the ground, there was absolutely no settlement in the furnace bottom.

These examples, together with other observations which I had to make in reference to these piles, have convinced me that they have an extraordinary bearing power. I attribute this bearing power particularly to the enormous skin friction due to the construction of the Simplex piling.

The Simplex pile has a very rough appearing surface on the outside, and therefore grips firmly the ground all the way down to the end of the pile, and herein, in my opinion, lies the great advantage of this pile over other makes. My experience in using these piles has convinced me that the good results were due especially to the skin friction, and I can say, without hesitation, these piles bear out all the claims that are made for them. I have used them in most trying ground, especially at Crystal City, Mo., and from my observation I can highly recommend them.

Trusting that this information will be of interest to you, believe me,

Yours truly,

PITTSBURG PLATE GLASS COMPANY,
C. C. STUTZ



INSTALLING FOUNDATIONS INSIDE BUILDING BY SPECIAL DRIVER AND SECTIONAL FORMS
Pittsburg Plate Glass Co., Crystal City, Mo.

C. C. STUTZ, Eng'r



Cut showing RED SHALE ROCK FILL, through which 600 STD SIMPLEX PILES were driven to Natural Rock. Average Penetration 35 ft.
Residence of Mr. J. B. Duke, Somerville, N. J. HORACE TRUMBAUER, Arch't



STANDARD SIMPLEX PILING BEING CUT OFF TO PROPER GRADE. Note perfect appearance of piling exposed after being driven through the rock fill shown on preceding page



GRATZ COLLEGE, Philadelphia, Pa.

PILCHER & TACHAU, Arch'ts



CLINCH AVENUE VIADUCT, Knoxville, Tenn

W H COURTNEY, Chief Engr L & N. R.R.



BOILER HOUSE, Cincinnati, O.
Cincinnati Water Works

G. H. BENZENBERG, Eng'r



OVEN FOUNDATIONS
Vinton Colliery Co., Vintondale Pa

CHAS. L. HOWER, Eng'r



POST OFFICE, Marietta, O.

JAMES KNOX TAYLOR, Supervising Arch't



TWO 100 x 40 feet STORAGE TANKS
Standard Oil Co., East Boston, Mass.

THOMAS W. CLARKE, Eng'r



SOME SATISFIED USERS *of the* SIMPLEX SYSTEM

CANADA

Dominion Coal Co.	Coal Pockets	Montreal	Davidson & VonAueberg, Eng'rs and Cont'rs
Grand Trunk R.R. Co.	Car Shops	Stratford	Grand Trunk R.R. Co., Eng'r Div.
Portland & Seattle R.R. Co.	Concrete R.R. Trestle	Vancouver	H. Stevens, Eng'r Bridges
Harbor Commissioners of Dominion of Canada	Grain Elevator	Montreal	John T. Metcalf Co., Eng'rs
Harbor Commissioners of Dominion of Canada	Harbor Shed No. 16	"	F. W. Corte, Eng'r

CONNECTICUT

Ashcroft Mfg. Co.	Factory Buildings	Bridgeport	G. K. Hooper, Eng'r
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DISTRICT OF COLUMBIA

Potomac Electric Power Co.	Power House	Benning	J. G. White & Co., Eng'rs
U. S. Navy Yard	Barrack Buildings	Washington	J. S. Sewell, Capt. Eng'rs, U. S. A.
Anderson Dray & Storage Co.	Warehouse	"	Cranford Paving Co., Cont'rs
Union Station, Pennsylvania R.R. Co.	Train Sheds	"	D. H. Burnham Co., Arch'ts
Monroe St. Bridge	"	"	W. J. Douglas, Eng'r of Bridges
Pennsylvania R.R. Co.	Passenger Station	"	Robt. Farnham, Jr., Arch't and Eng'r
Pennsylvania R.R. Co.	Freight Station	"	Robt. Farnham, Jr., Arch't and Eng'r
Army War College	Power House and Stack	"	J. S. Sewell, Capt. Eng'rs, U. S. A.
Masonic Temple	"	"	Wood, Donn & Demming, Arch'ts
Union Station	Plaza Improvements	"	D. H. Burnham Co., Arch'ts
Apartment House	"	"	H. Wardman, Builder
U. S. Capitol Buildings	Heat, Light and Power Plant	"	Westinghouse, Church, Kerr Co., Eng'rs
Washington Hotel Co.	Hotel Building	"	A. P. Claik, Jr., Arch't
E. H. Everett	Residence	"	G. O. Totten, Arch't
Laboratory Building	19th and B. Sts., N. W.	"	Upton & Smoot, Eng'rs

ILLINOIS

St. Luke's Hospital	Additional Buildings	Chicago	E. E. & M. C. Shankland, Arch'ts
U. S. Naval Training Quarters	Drill & Mess Halls	N. Chicago	C. E. McHay, U. S. N.
E. St. Louis Suburban R.R. Co.	Lansdowne Viaduct	E. St. Louis	Lichter & Jens, Eng'rs

INDIANA

Filter Plant		Evansville	Alvord & Berdick, Eng'rs
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SOME SATISFIED USERS *of the* SIMPLEX SYSTEM

IOWA

People's Light Co
Government Stables
Chicago, St. Paul, Minneapolis & Omaha R R

New Buildings and Trestle
Round House

Davenport . . . Private Plans
Ft. Des Moines . . . C E. Atkinson, U.S.A.
Sioux City . . . Div. Eng'rs

KENTUCKY

Belknap Hardware & Mfg. Co.
E. H. Bowen & Co.
J. F. Hopkins
Rugby Distillery
Cut-off Embankments
Kentucky Electric Co.
Fetter Heating & Lighting Co.
Commissioners of Sewage
Commissioners of Sewage

Warehouses
Warehouse
Residence
Warehouses
Power Plant
Power Plant
Shawnee Park Sewer
34th St. Outlet Sewer

Louisville . . . D. X. Murphy & Bro., Arch'ts
D. X. Murphy & Bro., Arch'ts
W. H. Lee, Eng'r
J. J. Gaffney, Arch't
Maj. J. F. Claybrook, Eng'r
Donald McDonald, Eng'r
D. X. Murphy & Bro., Arch'ts
J. F. Breed, Chief Eng'r
J. F. Breed, Chief Eng'r

LONG ISLAND

Astoria Light, Heat & Power Co.
The Blanchard Co.
Standard Oil Co.

Purifier House
Factory Buildings
Stable, Warehouse and Office Building

Astoria . . . Howard Bruce, Eng'r
Long Island City . . . Paul C. Hunter, Arch't
" " . . . Thos. W. Clarke, Eng'r

MAINE

West End Realty Co.

Shoe Factory

Portland . . . J. C. & J. H. Stevens, Arch'ts

MARYLAND

Baltimore Fish Market
Retail Market and Medical Inst.
Wells Building
Jno. Hopkins Hospital
Jno. Hopkins Hospital
Gambrill Warehouse
Pratt and Gay Sts.
Zell Motor Car Company
Residence
State of Maryland

Warehouse Building
Hospital Buildings
Warehouse Building
Garage
1304 Paul Street
Tobacco Warehouses

Baltimore . . . Simonson & Pietsch, Arch'ts
Simonson & Pietsch, Arch'ts
Private Plans
Private Plans
Private Plans
J. O. Hedderman, Eng'r
C. L. Stockhausen, Eng'r
E. H. Glidden, Arch't
Howard Sill, Arch't
Baldwin & Pennington, Arch'ts

SOME SATISFIED USERS *of the* SIMPLEX SYSTEM

MARYLAND — *Continued*

City of Baltimore	Payson Street School	Baltimore	E. D. Preston, Inspector of Buildings
Schmidt Baking Co.	Bakery and Warehouse	"	Owen & Sisco, Arch'ts
Homewood Apartment Co.	Apartment House	"	E. H. Glidden, Arch't
Paper Mills Co.	Factory Building	"	Private Plans
Baltimore & Ohio R.R.	Freight Transfer Sheds	Chicago Jc.	M. A. Long, Chief Eng'r
New City Hall		Cumberland	Holnboe & Lafferty, Arch'ts

MASSACHUSETTS

Boston & Albany R.R.	Coal Pockets	Boston	Boston & Albany R.R., Engineering Dept.
Coleman & Gilbert	Apartment House	"	F. A. Norcross, Arch't
Boston & Albany R.R. Co.	Sand Heater House	"	Boston & Albany R.R., Engineering Dept.
J. B. Strober	Garage Building	"	E. J. Lewis, Arch't
Benj. Levine	Apartment House	"	F. A. Norcross, Arch't
Ansonia Trust	Apartment House	"	Newhall & Blevins, Arch'ts
Boston Consolidated Gas Co.	General Shop Building	"	H. N. Cheney, Engineer of Construction
S. A. Woods Machine Co.	Power House	"	C. T. Main, Eng'r
Armory Garage		"	Burtis S. Brown, Eng'r
City of Boston Park Dept.	Aquarium	"	W. D. Austin, Arch't
H. W. Conner	Apartment House	Brookline	G. H. Desmond, Arch't
C. A. Hathaway & Sons	Bakery	Cambridge	Benj. Fox, Inc., Arch'ts
Lehigh & Wilkesbarre Coal Co.	Coal Pockets	Charlestown	G. P. Carver, Eng'r
Standard Oil Co.	Store House	E. Boston	T. W. Clarke, Eng'r
Standard Oil Co.	Oil Tanks	"	T. W. Clarke, Eng'r
Boston & Albany R.R. Co.	Pumping and Heating Plant and Transformer Station	"	Boston & Albany R.R., Engineering Dept.
Vacuum Oil Co.	Oil House	E. Cambridge	T. W. Clarke, Eng'r
Farr Alpaca Co.	Mill Buildings	Holyoke	S. M. Green, Inc., Eng'rs
Farr Alpaca Co.	Boiler House	"	S. M. Green, Inc., Eng'rs
Farr Alpaca Co.	Chimney Foundations	"	S. M. Green, Inc., Eng'rs
Thos. G. Plant Shoe Co.	Boiler House and Factory Buildings	Jamaica Plain	M. D. Safford and J. H. Higgins, Arch'ts
Boston & Northern Street Ry. Co.	Power House	Lawrence	{ B. & N. Street Ry. Co.
Pacific Mills	Mill Buildings	"	{ W. N. Cargill, Supt. of Power Stations
Pacific Mills	Coal Pocket and Power House	"	L. E. Locke, Gen. Contr.
Pacific Mills	Electric Power Plant and Coal Pocket	Lawrence	Lockwood, Greene & Co., Eng'rs
			C. T. Main, Eng'r

SOME SATISFIED USERS *of the* SIMPLEX SYSTEM

MASSACHUSETTS — *Continued*

B. F. Keith	Theatre	Lowell	F. A. Norcross, Arch't
Bigelow Carpet Co.	Chimney Foundation	"	John A. Stevens, Eng'r
Naumkeag Steam Cotton Co.	Weave Shed	Salem	Lockwood, Greene & Co., Eng'rs
New York, New Haven & Hartford R.R.	3 Freight Houses	So. Boston	N. Y., N. H. & H. R.R., Div. Eng'r

MICHIGAN

Pingree Shoe Factory	Detroit	Donaldson & Meiers, Arch'ts
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MISSOURI

Continental Portland Cement Co.	Cement Plant	Continental	W. F. Gray, Eng'r
Emery Bird Thayer Dry Goods Co.	Warehouse	Kansas City	Howe Hoyt & Cutler, Arch'ts
La Salle Office Building		St. Louis	Isaac Taylor, Arch't

NEW JERSEY

MacAndrews & Forbes Co.	Tank Foundations	Camden	E. F. Schlichter, Cont'r
Victor Talking Machine Co.	Cabinet Shop		Ballinger & Perrot, Eng'rs
Victor Talking Machine Co.	Tank Foundations		Ballinger & Perrot, Eng'rs
Castle Kid Company	Factory Buildings		Wm. Steele & Sons Co., Eng'rs
R. Priesendanz	Shop Buildings		Simplex Foundation Co., Cont'rs
Standard Oil Co.	Oil Tank Foundations	Claremont	Thos. W. Clarke, Eng'r
Standard Oil Co.	Oil Tank Foundations	Constable Hook	Thos. W. Clarke, Eng'r
S. T. Baker Oil Co.	Can Factory	Elizabeth	Thos. W. Clarke, Eng'r
Pennsylvania R.R. Meadow Shops	Planing Mill	Newark	Roydhouse Arey Co., Cont'rs
Standard Oil Co.	Can Factory		Thos. W. Clarke, Eng'r
J. B. Duke Residence		Somerville	Horace Trumbauer, Arch't
Crescent Belting and Packing Co.	Factory Building	Trenton	Abram Swan, Arch't

NEW YORK

Tuberculosis Infirmary		Blackwell's Island	R. F. Almirall, Arch't
Municipal Lodging House		New York	R. F. Almirall, Arch't
Rock Plaster Mfg. Co.	Mortar Mixing Plant		W. W. Kenley, Eng'r
Fruit Auction Exchange			F. T. Cornell, Arch't
Produce Exchange Bank			Ernest Flagg, Arch't

SOME SATISFIED USERS of the SIMPLEX SYSTEM

NEW YORK --- Continued

Bridge Abutments		Hoosick	T. R. Lawson, Eng'r
Standard Oil Co.		Rensselaer Island	T. W. Clarke, Eng'r
Johnson Iron Works	Stable	Spuyten Duyvil	Wyatt W. Taylor, Eng'r
Refuse Destroyer	Power House	W. New Brighton	J. T. Fetherston, Eng'r

OHIO

Cincinnati Gas & Electric Co.	Retort House, etc	Cincinnati	C. Miller, Eng'r
Cincinnati Gas & Electric Co.	Coal Pockets	"	E. Earnshaw, Eng'r
Cincinnati Water Works	Boiler House	"	G. H. Benzenberg, Eng'r
Pittsburg, Cincinnati & St. Louis R.R.	Butler St. Warehouse	"	G. LeBoutillier, Eng'r
Harrison Avenue Viaduct		"	City Eng'r Bridges
The Lunkenheimer Co.	Brass Foundry	"	Bert L. Baldwin, Eng'r
Woman's Club Building		"	Elzner & Anderson, Arch'ts
Baltimore & Ohio R.R.	Round House & Turntable	"	M. A. Long, Arch't
Chathfield & Woods	Reconstruction, Warehouse	"	Private Plans
Eldridge & Higgins	Warehouse	Cleveland	Richards, McCarthy & Bullford, Arch'ts
American Steel & Wire Co.	Stack Foundations	"	H. L. Schuler, Eng'r
Warehouse & R.R. Bridge		Columbus	J. L. Ballinger Construction Co.
Post Office Building		Marietta	Jas. Knox Taylor, Sup'v Arch't
American Steel & Wire Co.	Nail Mill	Salem	H. L. Schuler, Eng'r

OREGON

Mitchell, Lewis & Stover	Warehouse	Portland	Whidden & Lewis, Arch'ts
Clarence H. Sewell	Stores and Apartments	"	M. Whitehouse, Arch't

PENNSYLVANIA

State Normal School		Bloomsburg	Bennett & Woodnutt, Cont'rs
Westinghouse Machine Co.	Stack Foundations	E. Pittsburg	C. B. Craig, Eng'r
Westinghouse Machine Co.	Crane Foundations	"	C. B. Craig, Eng'r
Glen Willow Ice Co.	Ice Mfg. Plant	Glen Willow	Kurt W. Peuckert, Arch't
Carnegie Steel Co.	Power and Boiler Houses	Homestead	Fleming & Schafer, Eng'rs
Carnegie Steel Co.	Furnaces and Stoves	Homestead	F. B. Schafer, Eng'r
Carnegie Steel Co.	Carrie Furnaces, Nos. 6 and 7	"	Fleming & Schafer, Eng'rs

SOME SATISFIED USERS of the SIMPLEX SYSTEM

PENNSYLVANIA — Continued

Paper Mill Foundations
 Marine Barracks, U. S. Navy Yard
 Pennsylvania Railroad Co
 C. J. Mathews
 University of Pennsylvania
 Williamson Bros. Co
 G. W. Sharswood Public School
 Chandler Public School
 Theobald & Oppenheimer
 College of Physicians
 Mikveh Israel Synagogue
 Gratz College
 Dropsie College
 Church of the Nativity
 H. Disston & Sons Co., Inc.
 H. Disston & Sons Co., Inc.
 H. Disston & Sons Co., Inc.
 Jno. T. Lewis & Bros. Co
 First Church of Christ Scientist
 Philadelphia Electric Co.
 North American Lace Co
 Orinoko Mills
 Williamson Bros. & Co
 Williamson Bros. Co
 Barrett Mfg Co
 Trinity Reformed Church
 Burk Bros.
 Ft. Wayne Div. Pennsylvania Lines
 Pittsburgh & Lake Erie R.R. Co
 20th Century Women's Club
 Pittsburgh Plate Glass Co
 Jno. H. Trimble & Bro
 Spang Chalfant Co
 Pittsburgh Terminal Warehouse & Transfer Co
 Pittsburgh Plate Glass Co.

Officers' Quarters
 Passenger Station
 Factory Buildings
 Training Quarters
 Foundry Building

Cigar Factory

Machine Shops
 Storage Building
 Jobbing Shops
 Furnace House

Transformer Station
 Office Building

Power House
 Erecting Shop
 Fire Walls

Factory Building
 Power House
 Overhead Crossing
 Club Building
 Mixing House
 Factory and Office
 Foundry and Office Building
 38 Warehouses
 Cable Tower No. 4

LaFayette
 League Island
 Newport
 Philadelphia

Pittsburg

Geo. F. Payne & Co., Cont'rs
 Rankin, Kellogg & Crane, Arch'ts
 Pennsylvania Railroad Co., Div. Eng'rs
 Ballinger & Perrot, Eng'rs
 Horace Trumbauer, Arch't
 Wm. Steele & Sons Co., Eng'rs and Cont'rs
 Horace Cook, Supt. of Bldgs.
 Horace Cook, Supt. of Bldgs.
 Chas. Balderson, Arch't
 Cope & Stewardson, Arch'ts
 Pilcher & Tachau, Arch'ts
 Pilcher & Tachau, Arch'ts
 Pilcher & Tachau, Arch'ts
 Geo. Natress & Sons, Arch'ts
 Chas. McCaul Co., Cont'rs
 Wm. Steele & Sons Co., Eng'rs and Cont'rs
 Chas. McCaul Co., Cont'rs
 Sax & Abbott, Eng'rs
 Carrere & Hastings, Arch'ts
 Jno. T. Windnm, Arch't
 Wm. Steele & Sons Co., Eng'rs
 McLaughlin Bros., Eng'rs
 Westinghouse, Church, Kerr Co., Eng'rs
 Westinghouse, Church, Kerr Co., Eng'rs
 Private Plans
 C. P. Berger, Arch't
 Wm. Steele & Sons Co., Eng'rs
 Robt. Trimble, Eng'r
 A. R. Raymer, Ass't Chief Eng'r
 Geo. H. Schwan, Arch't
 J. H. Fox, Chief Eng'r
 Geo. H. Orth & Bro., Eng'rs
 Irwin & Witherow, Eng'rs
 Chas. Bickel, Arch't
 C. C. Stutz, Eng'r

SOME SATISFIED USERS *of the* SIMPLEX SYSTEM

PENNSYLVANIA — *Continued*

Pittsburg Plate Glass Co	Pot House No. 4	Pittsburg	C. C. Stutz, Eng'r
Pittsburg Plate Glass Co	Old Lehr Building No. 3	"	C. C. Stutz, Eng'r
Pittsburg Plate Glass Co.	Casting Hall & Lehr No. 4	"	C. C. Stutz, Eng'r
Pittsburg Plate Glass Co.	Furnace Hall and Producers	"	C. C. Stutz, Eng'r
Pittsburg Plate Glass Co	Lehr No. 2	"	C. C. Stutz, Eng'r
Pittsburg Plate Glass Co	Jointing House No. 4	"	C. C. Stutz, Eng'r
Pittsburg Plate Glass Co	Pot Storage Building	"	C. C. Stutz, Eng'r
Pittsburg Plate Glass Co.	Lehr No. 1	"	C. C. Stutz, Eng'r
Pittsburg Plate Glass Co.	Coaling Plant	"	C. C. Stutz, Eng'r
Pittsburg Plate Glass Co.	Furnace Hall	"	C. C. Stutz, Eng'r
Pittsburg Plate Glass Co.	Transmission Towers	"	C. C. Stutz, Eng'r
Pittsburg Plate Glass Co.	Furnace No. 5	"	C. C. Stutz, Eng'r
East Gate House	Filter Plant	"	City of Pittsburg
Pennsylvania R.R. Co.	Freight Transfer Building	"	W. F. Brown, Ass't Eng'r
Pittsburg, Cincinnati & St. Louis R.R.	Round House and Turnstable	"	B. V. Somerville, Eng'r
American Steel & Wire Co	Varnish Building, Retaining Wall	"	Private Plans
Rochester Tumbler Co.	Gas Producers	"	H. L. Dixon, Eng'r
Pittsburg Forge & Iron Co	Gas Producers	"	W. G. Wilkinson & Co., Eng'rs
Iron City Brewery Stables		"	E. B. Stotz, Arch't
Stoops Ferry, Pittsburg & Lake Erie R.R.	Passenger Station	"	A. A. Atwood, Chief Eng'r
Pittsburg & Lake Erie R.R.	Coal Hoist	"	A. A. Atwood, Chief Eng'r
Carnegie Steel Co	Electric Power House	"	Fleming & Schaffer, Eng'rs
McKeesport Tin Plate Co	Mill and Warehouse Buildings	"	Saml. L. Diescher & Sons, Eng'rs
Conroy Prugh Co	Warehouse	"	Chas Bickel, Arch't
State Armory Building		Reading	Muhlenberg Brothers, Arch'ts
State Armory Building		So. Pittston	McCormick & French, Arch'ts
Vinton Colliery Co	Coke Ovens and Washery	Vintondale	Chas. L. Hower, Eng'r
Luzerne Co. Court House	Approaches	Wilkes Barre	McCormick & French, Arch'ts
Westinghouse Air Brake Co	Pattern Shops	Wilmerding	J. B. Brooks, Eng'r
Westinghouse Air Brake Co	Blacksmith and Carpenter Shops	"	J. B. Brooks, Eng'r

RHODE ISLAND

United States Government	Pumping Station and Boiler House	Bradford	Bureau of Yards and Docks, U. S. N.
Regealed Ice Co.	Ice Plant	Providence	C. R. Makepeace, Eng'r
Woonsocket Machine and Press Co.	Factory Building	Woonsocket, R. I.	C. R. Makepeace, Eng'r

SOME SATISFIED USERS *of the* SIMPLEX SYSTEM

TENNESSEE

Louisville & Nashville R R	Concrete Viaduct	Knoxville	W H Courtenay, Chief Eng'r
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WASHINGTON

Oregon & Washington R R Co.	Passenger Station	Seattle	H F. Baldwin, Chief Eng'r
Oregon & Washington R R Co.	Freight Shed	"	J R Holman, Chief Eng'r
Jackson St. Viaduct		"	J. R. Holman, Chief Eng'r

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